

BRAIN EXCITATION AND PROTOTYPE DEVELOPMENT

All sorts of things can happen when you're open to new ideas and playing around with things ~Stephanie Kwolek, Kevlar inventor

☒ WHAT?

For next week (11/13), you need to develop a device that can be dropped into a body of water and then resurface in sixty seconds. We will test each prototype in class. You will be dropping your prototypes into a twenty-gallon aquarium that measures 20 inches wide x 10 inches deep (front to back) x 12.5 inches high.

The main goal of this assignment is to have fun, to play—I don't want you to spend countless hours building a machined prototype; I want you to explore "the problem" in a fun, creative way that doesn't become still more academic drudgery. As long as you bring *something* to class (well, unless you just bring a rock), you will get full credit for this assignment.

☒ WHY?

As Tom Wujec noted in his presentation, children are often the most creative because they approach tasks as play, thus not subjecting their minds to all of the negative filters that often accompany adult creativity. Also, many of the great inventors have credited play with providing the gateway to their greatest innovations.

Many diverse fields credit play with being integral to human development. As noted by the Lemelson Center for the Study of Invention and Innovation, "Through play we develop certain 'habits of mind'—curiosity, persistence, imagination, communication, problem solving—as well as skills in manipulating and understanding the properties of the material world." Sure, you may never again have to develop something that needs to submerge in water for sixty seconds, but I want you to reflect on the mental and physical processes and approaches you use during this exercise.

☒ SO?

I leave you with a quotation from Gregg Easterbrook that ties in to this project and our recent discussions:

Once, in Silicon Valley, I heard Joe Costello – a founding light of 'electronic design automation' and now CEO of the lowercase think3 – give a talk about the difference between seeking success and avoiding failure. Studies of crashes during aircraft landings under difficult circumstances, he said, showed that pilots who made bad mistakes when approaching an airfield and crashed, but lived to tell the tale, reported that they had been focused on avoiding obstacles. Pilots who made difficult landings without incident reported they had focused solely on the runway. Business and artistic success, Costello continued, follow the same pattern. Setbacks result from constantly trying to avoid obstacles, worrying about what might go wrong. Achievement results from keeping your eyes glued to the prize and endlessly repeating to yourself, 'I can do this.' Or, as I once wrote, 'Keep your gaze in the distance, and though you will stumble, you will reach your destination.'